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THE EPILEPTIC INTERVAL—ITS PHENOMENA AND THEIR IMPORTANCE AS A GUIDE TO TREATMENT.

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(*Continued.*)

(4).—Respiration.

(*a*) Cases. Special respiratory phenomena during the interval are not common. In 4 cases the patients had suffered much from bronchitis, but 2 of these also presented mitral murmurs. In 6 others dyspnœa had been troublesome, especially on walking fast, climbing stairs, or other vigorous exercise. These were to some extent persons that tired easily on any muscular effort. In 3 further cases frequent sighing was noted. In others the unfavorable influence of bad air is mentioned.

(*b*) Respiratory capacity. Féré (1888) finds that in the intervals the expiration is prolonged in most epileptics, and that the whole respiratory curve is spasmodic and jerky. He points out that epileptics, more often than is generally supposed, seem to present permanent convulsive phenomena. He also (1889) finds the respiratory capacity of the chest in epileptics to be decidedly less than normal. "The diminution of the respiratory capacity is augmented with the number of fits, and seems to be dependent upon paresis of the muscular mechanism of the thorax." Féré's work indicates that the bromides do not deserve all the blame for the occurrence of phthisis in epileptics that has been attributed to them; and a recent paper of Agostini's (*v. Neurlg. Centralb.*, 1891, p. 568), directly combats the reality of any such influence of the bromides.

(*c*) Seasons, climate, atmospheric pressure, etc. In a small percentage of cases only is the influence of the seasons noticeable—*e. g.*, decreased severity during the winter months—although in reality this factor has quite as much bearing on the circulation as on the respiration. The paper of Eskridge of Colorado (JOURNAL OF NERVOUS AND MENTAL DISEASE, 1887), indicates that altitude and moisture probably have little influence. Ingram has pointed out (N. Y. Neurological Society, Feb. 4, 1890), that sudden barometric and thermometric changes, particularly the former, are potent in producing epileptic explosions.

(5).—APPETITE, ASSIMILATION, BLOOD, URINE, ETC.

A. The peculiarities and capriciousness of the epileptic's appetite are well known, though it is too often assumed that they are all over-eaters.

1. Not rarely there comes an epileptic who, for considerable periods at least, has but a poor or indifferent appetite (20 in 150; special notes regarding these matters were, however, made in only 85 cases). That anoxexia may be a temporary sequence of the attacks disappearing quickly of itself, and that bromides may produce a like effect, are every day observations. But in the present cases it is usually either a symptomatic manifestation disappearing as the disease improves, or often is due to putrefactive processes about the oral cavity, upper air

passages or stomach, and then requires some direct attention in treatment. When any further appetizer is required the bitter stomachics usually suffice.

Not to be confounded with these are the unfortunates who have been subjected to severities in diet. We oftener see this from the mistaken zeal of friends in restricting the allowance of food than from poverty. Such starvation-cures do not help, but injure epileptics. What with their convulsions, insufficient food, unsatisfied cravings of hunger, and perhaps the exclusive use of bromides, their condition soon becomes pitiable. It is quite time to discredit such unnecessary and harmful severity. Even as regards the seizures, such a case immediately improves on receiving proper nourishment. Pepper even advocates (*N. Y. Med. Record.*, 1881, II.), a hygienic course resembling Weir-Mitchellism, to include rest in bed, feeding, bathing, etc., as very advantageous in numerous selected cases.

2. Many of these patients, on the contrary, have a large, even a voracious appetite. However, exclusive of bulimics, a good appetite was specially noted in only twenty-two cases. For the most part they crave meat, sometimes a particular kind of meat, as pork, or even more exclusively, ham; the hobby, however, may be for bread, cabbage, sweets, tea, or other articles. This appetite is not capricious, but fairly continuous,—unless at certain meals, or about the period of attacks, or during intercurrent troubles. Hence it seems to be a natural longing, to offset the exhausting effects of the disorder, and should not be too much restricted—beyond regularity of meals, the avoidance of any single excessive meal, the exclusion of recooked meats, cabbage, or fried articles, and possibly the limitation of meat to two or even to one meal a day. Various reported experiments with nitrogenous and non-nitrogenous diets have shown how little influence these matters exert.

3. Quite separate from the general condition of the appetite, or from the freakiness of this type of individual, are the true bulimic attacks to which certain

epileptics are subject (specially noted in but six of this series). This bulimia usually, if not always, bears some relation to the seizures, preceding them a short time—from a few hours to a couple of days. Hence it belongs rather to the premonitory phenomena, though possibly at times substitutive. It must not be wrongly inferred that these overfeedings bring on the attack, for this will occur no matter how sharply the food-supply may be controlled. Such transient but insatiable ravenousness, however, is clearly a nervous manifestation and no warranted craving of nature. Hence it is imperative at such times to limit and closely watch the dietary. Some cases of alcoholic epilepsy are probably of this nature, the craving for spirit like that for food being but a preliminary to an attack.

B.—THE MOUTH.

1. Coated tongue. This is important not only symptomatically, but also as constituting an evil in itself. It is very common. The tongue is usually more furred far back, gradually lessening until the tip and sides are free. It is very resistent to treatment, though sometimes improved by care as to diet and constipation.

2. Drooling was troublesome in three weak-minded patients. Gingivitis, a bad taste in the mouth, a bluish (metallic) line on the gums, were noticed a few times. Dental troubles, as a direct cause, have been described by a few writers, notably by Brubacker of Philadelphia.

3. Enlarged tonsils. This condition is, perhaps, closely allied to the hyperplasia of cervical glands considered below, and to nasal and ear troubles. When at all obstructive direct treatment is demanded.

4. Foul breath. This, quite independent of that form so often noticed after use of the bromides, is over-common amongst epileptics (5 cases in a series of 25; and of these 5 there were 4 under seventeen years of age). When possible these patients should be taught to take scrupulous care of the teeth and mouth, as the oral conditions just mentioned often play a part. Or there

may be a rhinitis or nasal obstruction that needs attention.

These indications suggested by the condition of the breath are important, as the usually present decomposing material, wherever it be, must continually poison and weaken the system as well as affect the digestion injuriously.[1]

C.—CONSTIPATION, ETC.

1. Intestinal torpor is recognized as one of the frequent banes of epileptics. It was noted in eighteen cases as being continuously or often troublesome; whilst in twelve the bowels were regular, or even over free (exclusive of paroxysmal diarrhœa). This condition is in many of these patients subject somewhat to their vagaries in eating. Consequently eructations, pyrosis, abdominal pain and bloating, colics, diarrhœa, etc., may be simply from indigestion. The dyspeptic symptoms and constipation have been attributed to the direct action of the drugs on the gastric mucous membrane. This assumption is but partly true, as epileptics *not* under medication often enough have these troubles, whilst per contra they frequently subside as the epileptic tendency abates, even where bromides are employed.

2. The character of the bowel-discharges of epileptics has scarcely received sufficient attention. My first observations on this point were quite casual, but a little further attention thereto has thrown some light on various of their digestive disturbances. The passage of coarse unmasticated and undigested fragments occurs to

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[1] The idea of Thomson (JOURNAL OF NERVOUS AND MENTAL DISEASE, 1890, p. 246), that ptomaines from the intestinal tract may, by their toxic effects, sometimes be a factor in epilepsy, serves to emphasize this, and Griffiths has (1892) extracted a poisonous leucomaine from the urine of epileptics. Herter, of New York (American Neurological Association, June 22, 1892), from comparative estimation of ethereal sulphates in the urine, finds that in numerous cases there is evidently increased putrefaction just before the seizures. Pommay (1881), Massolongo (1889), and others have described a form of "gastric epilepsy," considered by the former to be a reflex and by the latter an autotoxic effect.

a surprising extent. The stools at times seem largely composed of such material. This indicates that in the first place they do not properly masticate their food, and on this point a few words of explanation may be in place. The foods that should be thoroughly chewed, include vegetables, cereals, fruits, nuts, etc. (hydrocarbons). For their proper digestion it is desirable that they be reduced to a state of fine division, and then, also, well mixed with saliva. But as regards meats, fish, etc., this is not as imperative. It has been found experimentally that the muscle-fibers are more easily digested if not in a state of overfine division ; the stomach then retains them longer and can better roll and reduce them. All recooked meats and hashes are objectionable as compared to fresh cooked or cold meats.

Again, as to the manner of chewing. There is a prevalent idea that slow eating is very favorable to digestion. But this is largely fallacious. The important point is not that we eat slow or fast, but that when we do eat we chew with energy. Of course, where the haste is due to some mental anxiety this may injuriously inhibit the secretions. Slow eating begets a habit of simply mumbling the food without really masticating it, whilst the hurried eater is inclined to swallow before proper mastication. Hence, hurried eating is bad, but rapid mastication is advantageous. It concentrates our energies on the act in question, and hence more thoroughly accomplishes it. Moreover, energetic chewing stimulates the secretion of saliva in the most favorable manner.

These various points are so commonly misunderstood at least by the laity, that they demand our frequent attention. Especially is this matter important in the case of epileptics, whose guardians and attendants should be carefully instructed to supervise not so much the food of their wards as the manner in which it is consumed. As to the success of such watchfulness, the physician has a fair control by taking frequent occasion to inspect the passages for evidence of the nature suggested.

D.—SYSTEMIC CONDITIONS.

1. The body weight. A record of this gives a valuable clinical control over various matters, irrespective of the claim of Kowalewsky (1881), that there is a fall of 1 to 12 pounds in weight after every kind of an epileptic attack. Various observations counter to K.'s claim are summarized by Hare. But other than this an estimation as to the natural or morbid character of the appetite, the too excessive loss from use of the bromides, etc., is thus possible. In children it also gives a measure of their growth,—and not rarely these attacks begin or change at the period of most rapid development.

2. The blood—chemical changes. The few that have been noted, unless anæmia, are of paroxysmal origin. The anæmia also may, as shown by Féré, be thus caused, but where persistent should raise a suspicion of toxæmia or other basis. Schmitz (reptd. in *Neurlg. Centbl.*, 1892), has found that a venous hum can often be heard over the jugular in epileptics.

3. Dyscrasias. These fall largely under the head of continuous conditions. In any large series of cases there will be one or more due to congenital or acquired syphilis, malaria (*v.* the writer's article in *Brooklyn Med. Jour.*, January, 1893, p. 23–4), rickets, gout, rheumatism, lead, alcoholism, etc.

4. The urine. Any special frequency of albuminuria in epilepsy, even as a post-paroxysmal occurrence, has been disproven (*vide e. g.*, the summary in *Univ. Med. Magz.*, December, 1888). It thus becomes a valuable symptom in distinguishing uræmic convulsions from epilepsy.

According to Dr. Johnston Smith (*Jrnl. Ment. Sci.*, October, 1890), the phosphoric acid is slightly increased. Charcot's conclusions regarding the different ratio of earthy to alkaline phosphates in epilepsy and hystero-epilepsy, refer to paroxysmal conditions.

(6).—SEXUAL LIFE.

The influence of epilepsy on the sexual functions and period is known to be considerable, although this applies chiefly to the female. Fertility rather than sterility is unfortunately common. Some of these women are relatively exempt from attacks during pregnancy and to this is probably due the mistaken notion, popular in some countries, that pregnancy is curative of epilepsy.

At least 13 of 36 females between the ages of fourteen and forty-five years, showed some disorder of the sexual apparatus. Amenorrhœa (8 cases) and irregular menstruation are common,—exclusive of certain cases attributable to medication (bromides). Occasionally in girls, and even in women, a fœtid vaginal discharge is troublesome. There was one case of small ovarian cyst, one of prolapsus uteri, and one of ovariitis, besides others of pain in ovarian region.

Physicians often comfort mothers of young girls with the hope that the convulsions may cease upon the advent of menstruation. Except in the rarest instances such hopes are bound to suffer disappointment. Puberty is far more liable to bring an increase than any decrease in the severity of the morbid condition. The exceptions are only the occasional respites that occur at any time. It it well known that in women the attacks, even of idiopathic epilepsy, often recur with greater frequency about the menstrual epoch.

(7).—SKIN AND EXTREMITIES.

(*a*) Cold hands or feet—subjective or objective, usually both—are common, more, of course, during the cooler months. In a few the immediate unfavorable influence of the seizures is the chief cause, but many suffer much at all times. Of the latter there were twenty-one cases (1 only at night, another variably cold, then hot; in 6 only the hands were specified; in a few general chilliness also). This condition is usually assumed to indicate a sluggish circulation. But sweating of the soles and palms is generally the intermediary cause of the coldness, as this leads to abstraction of heat both by conduction and evaporation. Bromhydrosis also may be troublesome, perhaps more during the warm weather.

Whilst these perspiratory troubles may demand local measures, it is their constitutional treatment that has more than symptomatic significance. The dermatologists teach that the most powerful excitomotors, notably strychnine, are amongst the most serviceable internal remedies.

(*b*) General hyperidrosis. Excluding the palmar and plantar surfaces, perspiration to any noteworthy extent, is perhaps not more common in epileptics during the intervals than in other persons.[2] It was specifically stated in fourteen cases (1 in sleep, 1 in armpits principally, 1 formerly).

This is distinct from the very rare cases in which profuse sweating occurs as the precursor of an attack, or is paroxysmal (case of Emminghaus), or finally where it attends or follows an ordinary attack (3 cases of present series). A peculiar case of hemidrosis most marked at attacks, has been published by Brady (*Virg. Med. Monthly*, June, 1891).

(*c*) The frequent relationship of dermal affections to nervous troubles has long been noticed, though still but little understood. Polotebnoff has recently (1891) mentioned epileptic convulsions amongst various severe neuroses observed in psoriasis cases.

The casual observations in the present series include—pruritus universalis with lichen planus, pigment-nævus of face, Duyputren's contracture of palmar fascia, strumous eruptions on face and hands acne cachecticorium (2); intercurrent pruritus (2), gouty eczema, old psoriasis, acne (3 in young men, not from bromide), leucoderma about eyes and temples (case mitral regurgitant); slow felon on thumb, blepharitis ciliaris, labial herpes (2), and chronic dactylitis.

Féré, in one of his papers on respiratory phenomena, mentions a case of unilateral lentigo (freckles) in an epileptic. Romberg, in his once favorite treatise, says:

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[2] Bricon (1882), has even employed pilocarpin in epilepsy. And Boccolari and Borsari (*v. Centrlb. f. Med. Wissc*, 1892), found the galvanic resistance increased after the seizures.

"It appears that the susceptibility for epidemic and contagious diseases is diminished in epileptic patients." Urticaria, as an after-symptom however, has been observed by Zacher and by Pick.

Johnston Smith (*l. c.*) remarks on the rapidity with which the wounds of epileptics heal, their oily skin and their peculiar odor (musty according to some). On the other hand, Dayton (*N. Y. Med. Jrnl.*, 1891, I.), says: "The skin exhibits vascular change, want of complete nutritive support, the color being sallow, patchy or dark, and suggestive of a sluggish circulation."

The conjunctional and cutaneous ecchymoses occasionally seen are post-convulsive residua. According to Sandras (quoted by Hare), when an epileptic is exposed to the sun the skin of the face, and even elsewhere on the body, becomes covered with numerous *taches rosée* without any elevation, and which disappear rapidly when they go into the shade.

(8).—SLEEP.

Exclusive of twelve in which the seizures were largely or exclusively nocturnal, some note regarding sleep was made in 96 of the 150 cases. There were twenty-four who were good, quiet sleepers and fairly free from dreams. Hence, typical normal sleep is the good fortune in fully one-fourth of all cases of epilepsy. As a majority of the series were young patients and children, and normally better sleepers than adults, the small proportion here is the more striking. Most of the peculiarities to be mentioned are such as often enough occur in persons of average health, though statistical criteria in this respect are lacking. And yet they become in many cases of value as control-symptoms.

A.—WAKEFULNESS OF VARIOUS TYPES.

This is not very common, although some loss of sleep —from "being a poor sleeper," or not getting to sleep easily, or remaining awake if aroused, all the way to troublesome insomnia—is mentioned in eighteen cases. Loss of sleep, on the other hand, may make the epilepsy worse.

Under the head of "Insomnia in Children," Simons (*vide N. Y. Med. Jrnl.*, 1890), has given a description that tallies more nearly with night-terrors or even nocturnal epilepsy. "The insomnia of epilepsy is peculiar to itself, and is sometimes the only symptom for a considerable period. The child goes to bed well, wakes with a cry from profound slumber, sits up suddenly in bed, but soon falls back again either to sleep after a short interval or to lie awake, weak and prostrated. These attacks are always accompanied by incontinence of urine."

B.—OVERSLEEPINESS—SOMNOLENCE.

When present this is usually of the morning type, and in patients that are weak or exhausted, or at least have been dreaming, and so have not rested properly. The possible effect of drugs taken (bromides) must be remembered.

Quite different from this are the sleepy states that represent an epileptic equivalent (cases of Westphal, Fischer, Putzel, and at least one in present series; also G. W. Jacoby "Periodical Sleep Seizures of an Epileptic Nature." *N. Y. Med. Jrnl.* May 20, 1893).

C.—RESTLESSNESS IN SLEEP.

This is closely associated with dreams and insomnia. Further, it is apt to occur in those presenting choreic symptoms. Specially noted in fourteen cases. Snoring was troublesome in three, of which two were children of fourteen years. The "Sleep-Movements of Epilepsy" considered by Putnam, of Buffalo (*Jrnl. Ment. and Nerv. Dis.*, 1892, p. 599), were more or less limited and perhaps of some localizing value.

D.—DREAMS.

To these epileptics seem somewhat more disposed than do other individuals. In part they may represent equivalents, although there was no further evidence to show it. No particular kind of dream predominates, though often disagreeable. Probably their occurrence is not always remembered, and such other evidence as talking in sleep and night-walking might then be accepted. However, there was a distinct recollection of great or frequent dreaming in thirty-five, besides some further cases in which it less often occurred.

This is distinct from the observation of Hammond, that, " An aura may be entirely manifested by dreams and delusions."

Not very rarely these patients are subject to day dreams, evidently a kind of *petit mal.*

E.—SOMNAMBULISM, NIGHT TERRORS, ETC.

In seven cases—only two of which are included in the dreamers or talkers—there was a history of night-terrors or somnambulism. The oldest was twenty-five years, the others fifteen or under (2 m., 5 f.).

Again, in eight cases (5 of these not included in the dreamers), talking or moaning or laughing out in sleep was common.

As a symptom simply it is interesting to note that these morbid manifestations are also common in other members of epileptics' families.

(Compare, also, C. H. Hughes, "The Relationship of Somnambulism to Epileptoid and Epilepsy." *Phila. Ti. and Regstr.*, 1890, xxi, 8).

Night-sweats, cold feet at night, a habit of sleeping on the back or with the mouth open, are worth noting when as not rarely one or more is present.

Where the child persists in sleeping on the back, some rough or angular object can easily be tied against the spine at night.

F.—ENEURESIS NOCTURNA.

Of eneuresis we should remember that it may be a symptom of a seizure. Where, however, this occurs more or less habitually, and especially if observation of the sleeping child has failed to detect any evidence of corresponding seizures, it may be considered as habitual or symptomatic rather than paroxysmal. It was specially noted in but six cases, although this certainly does not represent all. Some few epileptics have been subject to this in youth, but, as alleged, before the development of seizures.

For comparison, Comby, of Paris, may be quoted (*v. Neurolg. Centbl.*, 1891, p. 445), who observed five cases of nocturnal eneuresis amongst ninety choreics.

Sometimes this habit is associated with mouth-breathing (due to nasal obstruction,[3] nasopharyngeal growths, or enlarged tonsils), in which case the relief of such other trouble exerts a favorable influence.

Various colleagues of my acquaintance, following the advice of Sir H. Thomson, have employed syrup of iodide of iron advantageously for this habit in general cases.

G.—POSITION OF THE HEAD IN SLEEP.

Some epileptics are inclined to sleep with the head overhigh, others with the head very low, or analogous thereto they lie on the belly or with the head covered. This is somewhat of a relative matter. An ordinary pillow and bolster may be called medium; a single thin pillow *or* a bolster may be considered low; whilst a thick pillow *and* bolster or the latter and more than one pillow is certainly high.

Of forty-six consecutive cases, eight are noted as high, twelve as low (including two with head under covers, and one sleeping on belly), five as medium, and twenty-one undesignated, probably also for the most part medium. This indicates that a majority, certainly half, present nothing unusual in this respect.

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[3] Mackenzie in this country, Yoal of France, and others have claimed that nasal trouble (congestion, epistaxis) is frequently due to genital irritation. Conversely, Major in Canada, Ziem, and Kœrner, in Germany, find that eneuresis may be due to mouth-breathing (nasal obstruction); and personal observation in a couple of cases has seemed to corroborate this.

The preferred position of the head during sleep is all the more important, if during treatment—as has repeatedly happened—the patient's habit in this regard undergoes a change. As with the other peculiarities in sleep, the value of this is largely relative, depending on the patient's general condition, the action of the heart, etc. But taken in connection with other occurrences, it may give a valuable hint as to the condition of the brain-circulation (or brain-nutrition if the expression be preferred). Where this latter is poor (anæmia), where severe bromidism is impending or too strong depressants are being used, and in most cases of nocturnal seizures occurring late at night, the person will sleep with the head low. Such patients are often oversleepy, exhausted and hard to arose mornings, and commonly have a poor appetite for breakfast. To the clinical importance of this group of symptoms in other troubles, I have elsewhere called attention ("The Morning Headache of Continuous Tire and Exhaustion," *Brooklyn Med. Jrnl.*, January, 1891).

These patients can often wear a night-cap advantageously, as also sleep on soft (warm) pillows.

II.—THE EMPLOYMENT OF STRYCHNINE IN EPILEPSY.

The habit of sleeping with the head low makes another interparoxysmal indication for the use of strychnine[4] in epilepsy. The correlated ones are: Seguin's ingenious plan where there is weakness of the ocular muscles; Vance's method based on the condition of the retinal circulation; the above pointed out condition of hyperidrosis and bromhydrosis; Brugnoli's suggestion (1889) in irritative conditions of the vagus—possibly equal to the now well-recognized value of this drug in conditions of cardiac and circulatory weakness corresponding to those so frequent in epileptics; as an agent to relieve severe bromidism.

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[4] Or its equivalent; strychnine brucia or their salts, the preparations of nux vomica or of ignatia amara, the compound syrup of the hypophosphites.

Hammond says: "In the nocturnal form of epilepsy strychnine is sometimes remarkably efficacious." And digitalis has also been specially recommended in this form.

All the indications for strychnine in epilepsy are, however, only for its temporary and carefully controlled use. At times it may be kept up for longer periods, but is never a continuous routine drug like the bromides.

Where, on the contrary, the patient sleeps with head high, an overactive brain-circulation is probable,—unless explained by some heart lesion. Consequently, remedies casually depressing are then in place, such drugs as strychnine being strongly contraindicated.

(9).—ENLARGEMENT AND INDURATION OF THE DEEP CERVICAL LYMPHATIC GLANDS (ESPECIALLY POST-CERVICAL ADENOPLASIA).

This condition is very common in children and young persons generally. Tuberculosis, syphilis, rachitis, and the acute exanthemata are the most notable general causes. Throat, scalp, and intracranial troubles act more exclusively local. Though children with almost any ailment easily develop adenoid hyperplasia, a perfectly healthy child free from all residua of disease ought not to have glandular enlargements. They are an indicator of past or present ailment, however slight.

Where these local glands were found to be small, they often seemed harder, suggesting a past process that had subsided, leaving an intractable induration.

These gland-changes appear to be more frequent in epileptics than in others, though we know of no proper data for comparison. The statistics of Van Arsdale (Discussion, N. Y. Academy, January 15, 1891), as he has personally informed me, refer to adenitis and are not applicable here.

Notes regarding these glands were made in 53 of 95 consecutive cases; the other 42 would, it is believed, average about the same. In 7 of these 53 there was no or but slight and doubtful enlargement. In the remaining 46 there was some, though frequently limited, increase in size,—"limited" referring to the proportion affected as well as to the degree of increase. This certainly represents over one-half of all cases. Of the 53 cases, 15 were over twenty-one years of age; and of the 7 negative cases, 6 were included in these 15 adults. This shows that it is predominently the younger patients that present this feature, and that it is all but universally present in those under age. In but a few of these cases has the condition of the lymphatic glands, in general, been examined. The submaxillaries and the axillaries are often but by no means so generally likewise affected. So far the actual facts.

1. Are these gland-enlargements in epileptics but part of a general enlargement of the lymphatic gland-system, and hence merely symptomatic of some constitutional disturbance? So far as observed it is the cervical glands that are more often and more markedly enlarged. Moreover, in but few cases is there other ground to suspect a systemic taint. Undoubtedly, however, this explanation holds for a certain small proportion.

2. Are they the result of altered brain-lymph, either from some trouble that is also causing the convulsions, or as a direct effect of the congestion attending them? This might be contended, in as much as in a few cases these enlargements have developed or increased whilst under observation.

3. Conversely, can such gland-alterations, whatever their origin, play any part in the causation of the epilepsy? Two ways suggest themselves in which such action might occur.

(*a*) By pressure of these bodies on neighboring nerves especially the sympathetic (trunk, ganglia, outgoing filaments) and the vagus, or on adjacent vessels. Hare says: "A form of peripheral lesion producing epilepsy, probably not by reflex action, is that recorded by Schultz (1855), where prolonged compression of the jugular vein caused the disease, or in those cases where enlarged cervical glands bring about a similar result." This evidently refers to large pacquets of glands, and even then it is exceedingly doubtful whether compression of a jugular could be an important factor.

The observations of Pröbsting (1882), and of Merklen (1887) have shown that habitual tachycardia may result from pressure on and implication of the vagus by affections of the tracheal and bronchial lymph-glands. Hence in some cases the rapid pulse of epileptics may be attributable to the pressure of enlarged bronchial, and even cervical glands on the vagus. This possibility is, however, hardly a warrant for the surgical removal of such cervical glands.

(*b*) By intraglandular interference with the lymph-discharge from the brain. This effect might be produced by the swelling of the glands or by the subsequent contraction where they subside. Various attempts have been made to establish a connection between brain troubles and the lymph discharge, though with limited success as yet. Little is known regarding impediments to the passage of lymph through glands, although the subject has recently been exploited by Chaffey. Moreever, there are collateral paths from the brain, and any tendency to cerebral œdema in epileptics is not recognized.

THE USE OF IODIDE OF IRON.

The indications for this are:

1. Eneuresis nocturna—already mentioned.
2. Congenital syphilis. In the few cases where there has been occasion to suspect the existence of this etiological factor, more good has followed the use of this than of the iodide of potassium.
3. The glandular enlargements, just described.
4. Anæmic or other conditions demanding iron. In these latter the iodide should be considered before deciding on any other ferruginous preparation.

As to the methods of dispensing, the individual preferences of the prescriber may vary. If the syrup of the iodide be given separately or not, the usual precautions must be taken. Dilute well and give after meals to avoid irritation of the stomach, and, of course, it should always be taken through a tube.

A fundamental rule in prescribing for epileptics is to limit the number and variety of doses; else, from the necessarily long continuance of medication, carelessness will creep in and ruin any chance of success.

The syrup of the iodide is fairly compatible with glycerine or simple syrup, and also with the bromide of potassium or sodium, but not with the alkaline iodides.[5] With the tincture of digitalis it certainly is not, and a rather dirty looking mixture is the result; yet so far as therapeutic effects are concerned, the result is still satisfactory, perhaps because only a portion of the iodide is broken up or the small quantity of free iodine may be all the more efficacious. Of course such a mixture must be properly shaken before each dose is measured out. The steady action of the digitalis is then not perceptibly interfered with. A combination of bromide of sodium, syrup of iodide of iron, and tinct. digitalis can thus be continuously administered for months without other change than a readjustment of dose or the occasional substitution for a few days of some stomachic in place of the iodide. Some patients, of course, do not bear the syrup well, no matter in what manner given. The dosage has never amounted to over three or four drachms a week, and often less, besides a gradual reduction of the drug when the progress of the case admits it.

As a substitute, a pill combination of iodoform and reduced iron has repeatedly done good service, but there is some question as to the safety of its long continued use.

(*To be concluded.*)

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[5] For various experiments with regard to this matter, I am indebted to Dr. Chas. H. Byrne.